v1: 20 February 2023

Research Article

Government Communication and Behavioral Change amidst COVID-19: Role of Awareness and Fear & Panic

Peer-approved: 20 February 2023

Qeios, Vol. 5 (2023)
ISSN: 2632-3834

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The study sought to assess the effect of government communication on the behavioral change of citizens amidst the COVID-19 pandemic, and the mediating role of awareness in this relationship. The moderating role of fear & panic in the relationship between awareness and behavioral change was also ascertained. The study was based on 304 residents in Ghana. Descriptive analysis was first conducted using SPSS software (v.23), after which Structural Equation Modelling (SEM) was run to estimate the path coefficients, using Amos software (v.23). It was concluded that government communication had a significant positive effect on behavioral change. Further, government communication had a significant positive effect on COVID-19 awareness, while awareness subsequently had a significant positive effect on behavioral change among the citizens. Awareness was found to partially mediate the relationship between government communication and behavioral change. Finally, it was concluded that although fear & panic had a direct positive effect on behavioral change among citizens, it negatively moderated the relationship between awareness and behavioral change.

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1. Introduction

Since the first set of COVID-19 cases was reported in Wuhan (Hubei Province, China) in December 2019 (Wu et al., 2021), and later declared by the World Health Organization as a pandemic on 11th March 2020 (WHO, 2020), countries all over the world began putting in place preventive measures to curtail the spread of the COVID-19 disease. Again, when Ghana announced its first two cases of COVID-19 on 12th March 2020, the government quickly stepped up its game to enforce the measures put in place prior to the announcement of the two cases in Ghana (Kenu et al., 2020). The government, in an attempt to enhance the awareness of self-protection among citizens, and also to ensure that the measures put in place were properly adhered to, engaged in active information dissemination on confirmed cases, recoveries, and deaths (Li et al., 2020). These communications, in the form of press briefings, championed by both the Ministry of Health and Information, were delivered on a daily basis in different languages via different media. The president, on different occasions, also updated the nation on the number of confirmed cases, recoveries, and deaths, and on measures put in place to curtail the impact of the pandemic.

 doi.org/10.32388/EKDY28.2

These communications were carried out to create awareness of COVID-19 and for citizens to adopt precautionary measures (social distancing, washing of hands, wearing of facemasks, etc.). According to Antwi-Boasiako and Nyarkoh (2021), effective government communication is said to be an important approach to tackling the pandemic. Government communication plays a significant role in citizens' decisions to adopt precautionary measures and vaccination to avert the impact of COVID-19 (Su et al., 2021). Citizens' exposure to timely and useful information from credible sources like government institutions has the tendency to influence citizens' perception of the government's determination to protect them (Chang, 2022). For the government to ensure that its citizens adopt a desired behavior, it is important that citizens are made aware of the precautionary measures put in place. Hence, the study seeks to examine the effect of government communication on citizens' behavioral change (BC) and the mediating and moderating roles of COVID-19 awareness, and COVID-19 fear & panic (F&P), respectively.

BC literature has asserted the influence of information on the BC of citizens (Whitehead and Parkin, 2022; Saaka et al., 2021; Abamecha et al., 2021; Lim et al., 2021; Ngigi and Busolo, 2018; Parsekar et al., 2020), though Kelly and Barker (2016) contend that providing information to citizens does not translate into a change in people's behavior. Recently, there were myriads of government communication studies where scholars have asserted the influence of government communication on citizens' BC during COVID-19 (Chang, 2022; Antwi-Boasiako and Nyarkoh, 2021; Hyland-Wood et al., 2021; Su et al., 2021; Radwan and Mousa, 2020). Su et al. (2021) sought to investigate the relationship between government communication and COVID-19 vaccination intention and found that government communication has a direct and indirect positive influence on citizens' intention to vaccinate. Antwi-Boasiako and Nyarkoh (2021) intended to examine the communication strategies that the government of Ghana employed to fight COVID-19. It was revealed that the communication strategies used by the government of Ghana to 'spread calm' rather than 'fear' through various COVID-19 platforms and websites had a positive effect on Ghana's COVID-19 fight. Though several studies have tested the influence of government communication on citizens' BC, not much has attempted to explore the effect of government communication on COVID-19 awareness, and how that could result in citizens' BC aimed at protecting themselves. Hence, the current study seeks to explore the mediating role of COVID-19 awareness in the relationship between government communication and BC.

The current study is based on fear appeal theories. The fear appeal theories suggest that information carrying an element of threat concerning a disease or pandemic provokes F&P. F&P of COVID-19 is said to motivate citizens to initiate BCs to take precautionary measures to protect themselves (Wu et al., 2021; Ruiter et al., 2014). According to So et al. (2016), messages that carry high levels of threat induce both F&P. A study by So et al. (2016) revealed that anxiety brings about a higher level of motivation to attain information than fear. Du et al. (2020) also revealed that intense information about confirmed cases of COVID-19 is linked with a high tendency to look for protective behaviors. Though scholars have studied the effect of fear appeal on the BC of citizens, most of these studies were not conducted in Sub-Saharan Africa, especially Ghana (Wu et al., 2021; Scopelliti et al., 2021; Du et al., 2020). Again, most of these studies do not attempt to explore the moderating effect of F&P of COVID-19 on the relationship between COVID-19 awareness and BC of citizens. The current study, therefore, believes that F&P can play a significant moderating role in the relationship between COVID-19 awareness and BC.

The current study, therefore, aimed to assess; first, the direct effect of government communication on BC. Second, the mediating effect of COVID-19 awareness in the relationship between government communication and BC, and lastly, the moderating effect of COVID-19 F&P in the relationship between COVID-19 awareness and BC. Figure 1 represents the conceptual framework of the study.

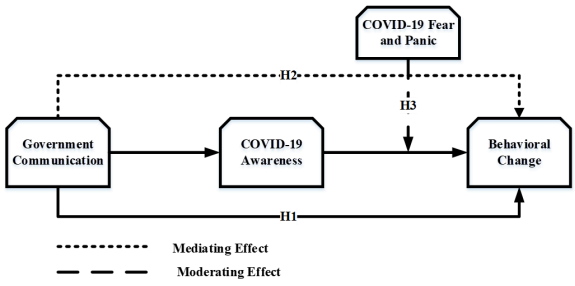

Figure 1. Conceptual Framework

Hypotheses:

- *H1: Government communication influences behavioral change.*

doi.org/10.32388/EKDY28.2

- *H2: COVID-19 awareness mediates the relationship between government communication and behavioral change.*
- *H3: Fear & panic moderates the relationship between COVID-19 awareness and behavioral change.*

2. Methods

2.1 Research Design

The research design was both descriptive and explanatory. The study was descriptive as it presented an analysis of the profile of the respondents sampled, using frequencies and percentages. Further, it also ran some descriptive analysis on the variables studied and their measurement items, using mean scores and standard deviation. The study was also explanatory in nature, as it sought to establish the effects of some variables on others, using Structural Equation Modelling (SEM) analysis.

2.2 Inclusion and Exclusion Criteria

The inclusion criteria for this study were, firstly, respondents should have a minimum of secondary (senior high) education. The essence was to enable the respondents to comprehend the measurement items since the researchers adopted a self-administered questionnaire, which respondents were to read, understand, and answer. Secondly, respondents were expected to be residents of Ghana at the time of data collection. Since the study focused on Ghana, it was essential that respondents answered the questionnaire from their experience in Ghana, and not elsewhere. Finally, respondents were also expected to be aged 18 years and above. This was to exclude minors who may be protected from giving out certain information. Respondents who did not meet these three criteria were excluded from the study.

2.3 Data Collection Procedure and Measurement Items

The data were gathered in May 2020, when the news about COVID-19 was at its peak, and multiple countries were on nationwide lockdowns. As of that time, Ghana had just lifted the three-week lockdown on its major cities (20th April 2020) but provided strict COVID-19 preventive measures, such as social distancing and mandatory wearing of facemasks. During the time of data collection, face-to-face questionnaire administration was not possible, so the researchers adopted an e-questionnaire. The link to the e-questionnaire was shared on WhatsApp group platforms and Facebook. A cover letter detailing the essence of the data collection, as well as the assurance of anonymity and confidentiality, accompanied the e-questionnaire link. After the data collection, 326 questionnaires were received. However, using the inclusion and exclusion criteria, 22 were deleted. The final data analysis was thus based on 304 datasets or respondents.

The questionnaire had five sections. Section A comprised Demographic information, including country of residence, gender, age, education, employment status, and marital status (Table 3). Section B sought to assess the frequency with which respondents listened to, read, or watched COVID-19 updates from government agencies of Ghana. They were to respond on a Likert scale of *1=Not at all; 2=Not often; 3=Quite often; 4=Often; 5=Always*. Section C assessed respondents' knowledge of COVID-19-related issues, and they were expected to respond on a Likert scale of *1=Strongly disagree; 2=Disagree; 3=Indifferent; 4=Agree; 5=Strongly agree*. Section D assessed the F&P surrounding COVID-19, and they were expected to respond on a Likert scale of *1=Strongly disagree; 2=Disagree; 3=Indifferent; 4=Agree; 5=Strongly agree*. Section E assessed the BC of respondents due to the COVID-19 outbreak and its accompanying lifestyle changes. BC items were responded to on a Likert scale of *1=Not at all; 2=Not often; 3=Quite often; 4=Often; 5=Always*.

2.4 Validity and Reliability Analysis

Since the study conducted path analysis, it was necessary to first assess the validity and reliability of the measurement items. Firstly, the study conducted Confirmatory Factor Analysis (CFA) with the support of Amos (v.23) software. Results were displayed in Table 1 and Figure 1. As a rule of thumb, minimum factor scores of 0.5 were expected to be achieved for each measurement item. Items with scores of less than 0.5 were deleted (Amoako et al., 2020). The internal reliability (consistency) of the retained items was assessed by running Cronbach's Alpha (CA) analysis in SPSS (v.23) software. Although some scholars recommend a minimum alpha score of 0.7 as an indication of high internal reliability (Pomegbe et al., 2020), others have also postulated that an alpha score of 0.6 is acceptable (Hulin et al., 2001; Pallant, 2020). With this, therefore, the alpha score of 0.678 for F&P was accepted, despite being less than 0.7.

Average Variance Extracted (AVE) and composite reliability (CR) were calculated to assess convergent validity. An AVE score of at least 0.5 and a CR score of at least 0.7 are indications of convergent validity (Fornell and Larcker, 1981), and these were achieved for all variables studied (Table 1). For the model fit indices, Hair et al. (2010) recommended that CMIN/DF should be less than 3, TLI and CFI should be greater than 0.9, GFI greater than 0.8, while RMSEA and RMR should be less than 0.08. Table 1 demonstrates that all the model fit indices were achieved, suggesting that the dataset appropriately fits the model.

Model Fit Indices: *CMIN=223.562; DF=155; CMIN/DF=1.442; GFI=0.936; CFI=0.979; TLI=0.972; RMR=0.059; RMSEA=0.038*	**Std. Factor Loading**
Government Communication/ Periodic Briefings (GCOMM): CA=0.865; CR=0.887; AVE=0.572	
GC1	.940
GC2	.806
GC3	.659
GC4	.630
GC5	.794
GC6	.663
Awareness Creation (CAWARE): CA=0.903; CR=0.908; AVE=0.556	
AC1	.736
AC2	.829
AC3	.848
AC4	.847
AC5	.766
AC6	.652
AC7	.670
AC8	.569
Fear & Panic (FPANIC): CA=0.678; CR=0.766; AVE=0.646	
FP1	1.019
FP2	.504
Behavioral Change (BCHANG): CA=0.854; CR=0.846; AVE=0.525	
BC1	.696
BC2	.760
BC3	.734
BC4	.762
BC5	.666

Table 1. Confirmatory Factor Analysis

CFI=Comparative Fit Index; CMIN/DF=Chi-Square/ Degree of Freedom; TLI=Tukey-Lewis Index; RMR=Root Mean Square Residual; RMSEA=Root Mean Square Error of Approximation

doi.org/10.32388/EKDY28.2

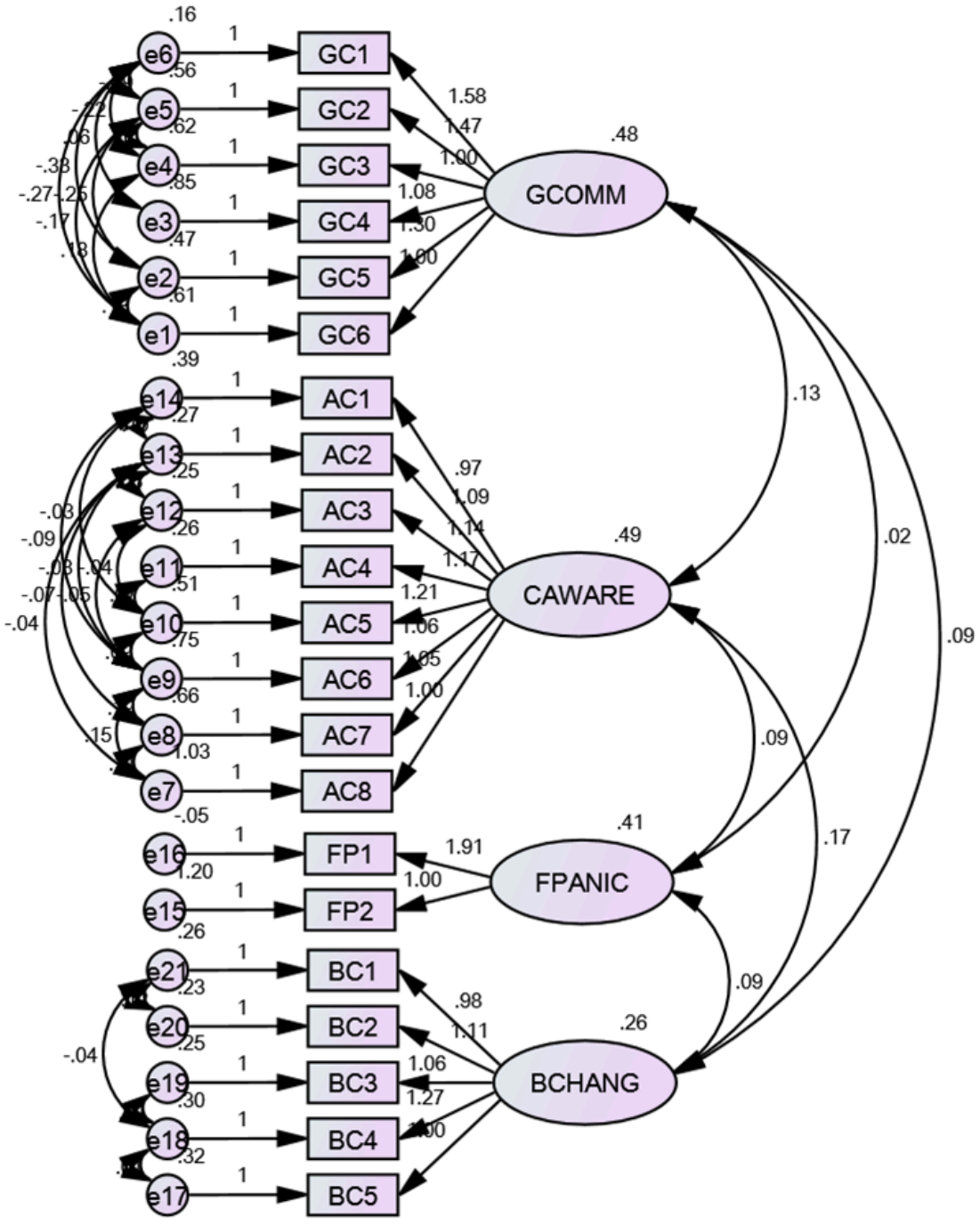

Figure 2. Confirmatory Factor Analysis

The discriminant validity for this study was assessed by measuring the square root of the AVEs (√AVEs) against the corresponding correlation coefficients (Table 2). Discriminant validity is said to be achieved when the √AVE is greater than the corresponding correlation coefficient (Sarsah et al., 2020). From Table 2, the least √AVE was 0.725 (BC), which was larger than the highest corresponding correlation coefficient of 0.472. It was thus concluded that discriminant validity was achieved by this study. Since the highest correlation coefficient was also less than 0.7, it was concluded that there was no multicollinearity which could potentially cause any

doi.org/10.32388/EKDY28.2

confounding effects in the model estimation (Dogbe et al., 2021).

doi.org/10.32388/EKDY28.2

Variables	1	2	3	4	5	6	7	8	9
Gender (1)	-								
Age (2)	0.114*	-							
Education (3)	0.010	0.084	-						
Employment (4)	0.104	0.229**	0.126*	-					
Marital (5)	-0.006	0.551**	0.044	0.204**	-				
GCOMM (6)	-0.062	-0.132*	0.055	-0.020	-0.124*	**0.756**			
CAWARE (7)	0.037	-0.038	0.088	0.105	0.035	0.270**	**0.746**		
FPANIC (8)	0.012	-0.029	0.187**	0.010	0.019	0.043	0.200*	**0.804**	
BCHANG (9)	-0.186**	0.046	0.008	0.126*	0.089	0.264**	0.472**	0.266*	**0.725**

Table 2. Descriptive and Discriminant Validity Analysis

*√AVE are bold and underlined; * ~ P-value significant at 5% (0.05); ** ~ P-value significant at 1% (0.01)*

3. Results

3.1. Demographics of Respondents

The analysis of the respondents' demographics was presented in Table 3. Results showed that male respondents dominated the study, representing 69.4% of the total respondents. The majority of the respondents were also aged 31-40 years, representing 49%. Almost all the respondents (97%) had tertiary degree qualifications, including HND, first degree, master's degree, and PhD. This indicates that the respondents to this study could read and understand the measurement items on the questionnaire. Respondents who were employed constituted 66.8%, followed by students (12.2%), self-employed (11.5%), and unemployed (6.5%). Respondents who were married were 54.9%, followed by singles (43.8%), and divorced (1.3%).

Demographics	Frequencies (N)	Percentages (%)
Gender	***304***	***100.0***
Female	93	30.6
Male	211	69.4
Age	***304***	***100.0***
18-30 years	94	30.9
31-40 years	149	49.0
41-50 years	36	11.8
51-60 years	23	7.6
Above 60 years	2	.7
Education	***304***	***100.0***
Secondary	9	3.0
Tertiary	295	97.0
Employment	***304***	***100.0***
Student	37	12.2
Unemployed	29	9.5
Self-employed	35	11.5
Employed	203	66.8
Marital Status	***304***	***100.0***
Single	133	43.8
Married	167	54.9
Divorced	4	1.3

Table 3. Demographics of Respondents

3.2 Descriptive Analysis of Measurement Items

The main variables were measured on a 5-point Likert scale, and as such, mean analysis was run on them (Table 4). Since it was a 5-point Likert scale, mean scores above 3 were considered desirable or in the positive range, while mean scores of less than 3 were considered as falling within the negative range. Out of the 6 measurement items under government communication, it was identified that only 2 had mean scores greater than 3. From the results presented, respondents agreed that they often followed (read, listened to, or watched) periodic briefings from Ghana's Ministry of Information (mean score =3.477), and the Ministry of Health – MoH or Ghana Health Service – GHS (mean score =3.339). Respondents largely disagreed on following periodic briefings from the Ministry of Communication, Ghana Police Service – GPS, National Commission for Civic Education – NCCE, and the Ghana Immigration Service – GIS. The overall mean score of government communication was 2.686, which suggests that largely, respondents did not follow government communications or periodic briefings. This suggests that respondents heavily relied on sources other than the government for news and reports on COVID-19. These channels may also include unauthorized platforms which could be spreading false news and updates on COVID-19 to create F&P among citizens.

Despite the respondents not following the government units or departments for COVID-19 updates, results suggest that respondents were very much aware of the COVID-19 outbreak. Table 4 showed that all 7 items under awareness creation had mean scores greater than 3. Respondents were much more knowledgeable about the mode of COVID-19 transmission, mode of COVID-19 prevention, signs and symptoms of COVID-19, what to do if one shows symptoms of COVID-19, the importance of providing accurate information to the COVID-19 contact tracing team, effects of stigmatizing COVID-19 patients, Ghana's COVID-19 statistics (i.e., number of cases, deaths, and recovery rate), and the health facilities for COVID-19 testing and treatment. The overall mean score was 4.114, which points to the fact that respondents were much more knowledgeable about the issues of COVID-19. Citizens being knowledgeable about COVID-19 was very essential in curbing the disease.

The overall mean score for F&P was 3.262, suggesting that there was some level of F&P among the respondents regarding COVID-19. For the individual items, respondents were of the view that there was a greater chance that many Ghanaians had the virus but were unaware (mean score =3.803). This was because, at the time of the study, Ghana did not have the capacity to embark on mass testing for the virus. Largely, those tested were suspected cases, usually through contact tracing. Respondents thus felt that the COVID-19 stats provided by the government may not be a true reflection of the real cases. Respondents were, however, not worried that Ghana could be an epicenter/hotspot soon (mean score =2.720). This suggests that, despite the news on COVID-19, respondents were confident that Ghana would not be an epicenter. This was probably due to the fact that during the time of the study, African countries had recorded fewer cases and casualties resulting from the virus, and there were speculations that the virus was more lethal in cold regions.

The descriptive results show that there has been significant BC as a result of COVID-19 (overall mean score =4.450). Respondents agreed that they washed their hands regularly without being compelled to do so, they tried to avoid crowded environments when shopping, their personal hygiene improved following the outbreak of COVID-19, they used face masks when out of their various houses, and they maintained a good distance when interacting with people. These were practices instilled in people as measures to curb COVID-19. This also indicates people's willingness to see to the eradication of the virus by altering their usual way of life.

Measurement Items	Mean	Std. Dev.
Government Communication/ Periodic Briefings	***2.686***	***0.884***
Information Ministry (GC1)	3.477	1.172
Ministry of Health (MoH)/Ghana Health Service (GHS) (GC4)	3.339	1.186
Ministry of Communication (GC2)	2.944	1.264
Ghana Police Service (GPS)(GC5)	2.276	1.133
National Commission for Civic Education (NCCE) (GC3)	2.115	1.048
Ghana Immigration Service (GIS) (GC6)	1.967	1.046
Awareness Creation	***4.114***	***0.810***
I have knowledge on the mode of Coronavirus (COVID-19) transmission (AC1)	4.398	0.924
I have knowledge on the mode of COVID-19 prevention (AC2)	4.329	0.928
I have knowledge on the signs and symptoms of COVID-19 (AC3)	4.211	0.941
I have knowledge on what to do if I show symptoms of COVID-19 (AC4)	4.197	0.968
I have knowledge on the importance of providing accurate information to the COVID-19 contact tracing team (AC7)	4.135	1.098
I have knowledge on the effects of stigmatizing COVID-19 patients (AC5)	4.128	1.111
I have knowledge on Ghana's COVID-19 statistics (i.e., number of cases, deaths, and recovery rate) (AC8)	3.862	1.235
I have knowledge on the health facilities for COVID-19 testing and treatment (AC6)	3.651	1.145
Fear & Panic	***3.262***	***1.075***
There is a greater chance that many Ghanaians have the virus but are unaware (FP1)	3.803	1.200
I am worried Ghana could be an epicenter/hotspot soon (FP2)	2.720	1.271
Behavioral Change	***4.450***	***0.605***
I wash my hands regularly without being forced to (BC3)	4.533	0.735
I try to avoid crowded environments when shopping (BC1)	4.500	0.718
My personal hygiene has improved following the outbreak of COVID-19 (BC5)	4.477	0.762
I use my face mask when out of my house (BC4)	4.388	0.845
I maintain a good distance when interacting with people (BC2)	4.352	0.739

Table 4. *Descriptive Analysis of Measurement Items*

3.3 Structural Equation Modelling

The path coefficients were estimated using a covariance-based Structural Equation Modelling (SEM) in Amos (v.23) software, which was used to analyze the path coefficients. The Bias-Corrected (BC) percentile method of bootstrapping was used, with 5000 bootstrap samples and a 95% confidence level. Results were presented in Table 5 and Figure 3. The study controlled for the age of respondents, marital status, employment status, educational qualification, and gender. Results showed that age, marital status, and employment had a positive but statistically insignificant effect on BC (p-values > 0.05). Education

doi.org/10.32388/EKDY28.2

also had a negative but statistically insignificant effect on BC among respondents (p-value > 0.05). Gender, however, had a significant negative effect on BC (). Gender was coded as 0=female and 1=male. The negative coefficient, therefore, suggests that male respondents were less likely to have BC compared to female respondents. That is, female respondents complied with the COVID-19 protocols more strictly than male respondents. Females were 26% more likely to observe the COVID-19 protocols compared to their male counterparts.

Results showed that government communication had a significant positive effect on BC (). That is, the periodic briefings from the government enhanced the chances of respondents' adherence to the COVID-19 protocols by a margin of 9.5%. Hypothesis "*H1: Government communication influences behavioral change*", was thus accepted by this study.

To assess the mediating effect of awareness, the effect of government communication on awareness was first estimated and found to be significantly positive (). That is, the more government agencies provided periodic briefings on COVID-19, the higher the awareness creation among the citizenry. Government communication enhanced awareness creation by 28.2%. Awareness about COVID-19 also had a significant positive effect on BC (). Awareness about the virus significantly influenced respondents' adherence to the various protocols by a margin of 22.2%. Thus, creating COVID-19 awareness is an essential tool in curbing the virus through BCs. The coefficient of the mediating effect was 0.063, which was statistically significant (both lower-and-upper bounds were positive, and therefore, zero 90) cannot be located in between them). That is, the periodic briefings from government agencies enhanced the awareness creation among the citizenry, which subsequently led to BCs. Since there existed a direct significant relationship between government communication and BC, it was thus concluded that awareness only had a partial mediating effect. Hypothesis "*H2: COVID-19 awareness mediates the relationship between government communication and behavioral change*", was thus accepted by this study.

doi.org/10.32388/EKDY28.2

Direct Paths	UnStd. Estimate	Std. Error	C.R.
GCOMM → CAWARE	0.282	0.073	3.842**
GCOMM → BCHANG	0.095	0.042	2.270*
CAWARE → BCHANG	0.222	0.048	4.636**
FPANIC → BCHANG	0.127	0.043	2.971**
AC_FP → BCHANG	-0.096	0.022	-4.472**
Age → BCHANG	0.044	0.030	1.480
Marital → BCHANG	0.023	0.050	0.449
Employment → BCHANG	0.034	0.025	1.378
Education → BCHANG	-0.026	0.112	-0.229
Gender → BCHANG	-0.260	0.060	-4.332**
Indirect Paths	**UnStd. Estimate**	**Lower BC**	**Upper BC**
GCOMM → CAWARE → BCHANG	0.063	0.026	0.133
Model Fit Indices: *CMIN=575.556; DF=292; CMIN/DF=1.971; GFI=0.879; CFI=0.903; TLI=0.919; RMSEA=0.057*			

Table 5. Path Estimates

Bias-Corrected (BC) Percentile Method; 5000 Bootstrap sample; 95% Confidence level

** *~ P-value significant at 1% (0.01)*

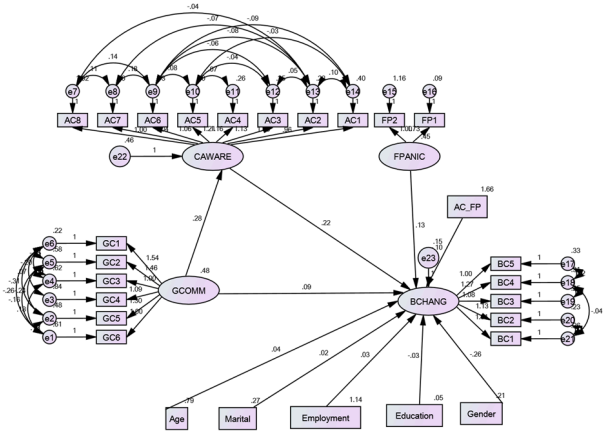

Figure 3. Structural Paths

To ascertain the moderating effect of F&P, the effect of F&P on BC was first established and found to be significantly positive (). This implies that the more people perceive the dangers of COVID-19, the more likely they were to engage in BCs, leading to stricter adherence to the protocols, by 12.7%. A mean centering approach was used in calculating the interaction term. Results demonstrated that the interaction term (AC_FP) had a significant negative effect on BC (). Results thus suggest that, among respondents who were much more knowledgeable about COVID-19, F&P rather reduced their BC tendencies. That is, F&P had a detrimental effect on the relationship between awareness and BC. Hypothesis "*H3: Fear & panic moderates the relationship between COVID-19 awareness and behavioral change*", was therefore accepted by this study.

4. Discussion

Findings revealed that periodic briefings from government institutions (which we termed as government communication), such as the Information Ministry, Ministry of Health, Ghana Health Service,

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Ministry of Communication, etc., significantly influenced BC among the study group. That is, government communications made people more willing to adhere to COVID-19 preventive measures, such as washing hands regularly without being compelled to do so, avoiding crowded environments when shopping, improving personal hygiene, wearing facemasks when out of the house, and maintaining a good distance when interacting with people. Health communication from government agencies can thus be regarded as an antecedent of BC. Our findings resonate with researchers such as Durand et al. (2021), who found that effective government communication is key to managing any pandemic. Communication is regarded as a changing or shaping tool that aims to form a desired behavior through knowledge (He et al., 2014). Again, effective communication is said to have an impact on society and BC (Ghosh and Saha, 2013). According to Ghosh and Saha (2013, p. 308), communication in the form of "public health campaigns using mass media has proven to be effective in changing knowledge, attitude, and behaviors for various health issues including reproductive health and family planning, HIV/AIDS, tobacco and drug use, heart disease" and more recently COVID-19. Hence, there is a need for the government to take advantage of its resources and capabilities to rally citizens to adopt preventive measures; thus applying hygiene rules, mask-wearing, social and physical distancing, and vaccination in the combat against COVID- 19.

The present study identified that awareness mediates the relationship between government communication and BC in Ghana. That is, government communication enhanced citizens' knowledge of the mode of COVID-19 transmission, the mode of COVID-19 prevention, the signs and symptoms of COVID-19, what to do if one shows symptoms of COVID-19, the importance of providing accurate information about the COVID-19 contact tracing team, the effects of stigmatizing COVID-19 patients, Ghana's COVID-19 statistics (i.e., number of cases, deaths, and recovery rate), and the health facilities for COVID-19 testing and treatment. This knowledge or awareness creation further enhanced the chances of BC among citizens. Awareness, therefore, acts as an intervening variable in the relationship between government communication and BC. That is, BC takes place when citizens are aware of the details of the pandemic, which is achieved through periodic briefings from government agencies and institutions. Communication has been noted to boost awareness for centuries (Leavy et al., 2014). While companies rely on communication through mass media to create awareness about their brand, governments also rely on communication in times of serious health threats to draw their citizens' attention to the disease or pandemic (COVID-19). During the pandemic, the purpose of government communication was to inform its citizens about the virus and the necessary precautionary measures they should take. These communications create awareness of COVID-19, which eventually motivates citizens' health and BC (Radwan and Mousa, 2020). According to Ngwu (2017), BC communication is one of the strategies that is adapted to move people from awareness to action. Ngigi and Busolo (2018) stated that BC communication affects the adoption of recommended behavior. Studies have also established the relationship between awareness and BC (Kite et al., 2018; Mei et al., 2016). For instance, Kite et al. (2018), in their study to test whether recognition of health campaigns results in BC, found that recognition has an influence on BC. Mei et al. (2016) also found a relationship between environmental awareness and BC toward climate change, waste management, water pollution, and air pollution among Malaysians.

Finally, the study found that F&P negatively moderated the relationship between awareness and BC amidst COVID-19. The outbreak of the COVID-19 pandemic brought about so much F&P among citizens all over the world, and the role of government communication was to phase out rumors and false information. According to the framework for fear appeal, a higher level of fear and anxiety results in an increased motivation to gain relevant information that helps them protect themselves or obtain a desired behavior (So et al., 2016). Again, other studies have also confirmed the positive influence of F&P in an individual's life to adopt a desirable behavior (Wu et al., 2021; Leung et al., 2021). For instance, Wu et al. (2021), whose study was based on the fear appeal, found that anxiety has a significant influence on citizens' preventive behavior. Leung et al. (2021) also state that F&P is an emotional trigger that influences citizens' impulse buying behavior during the pandemic. Basch et al. (2020) suggest that F&P serves as a spur for citizens' information search. Studies have also proven the positive influence of awareness and BC (Abd Hamid et al., 2021; Sen et al., 2021; Mulchandani and Orji, 2021). However, the joint effect of both awareness and F&P was found to reduce BC among citizens. This, therefore, suggests that when citizens are more knowledgeable about the pandemic, F&P will not be a good tool for enhancing BC. Similarly, when citizens are less knowledgeable about the pandemic, F&P becomes an effective tool for achieving BC. It was realized from Figure 4 that the score for BC was almost the same for 'high awareness and high F&P' (orange line) and 'high awareness and low F&P' (blue line). This

shows that the effect of F&P was very minimal when awareness of COVID-19 was at high levels. F&P was, however, an effective tool in enhancing BC when knowledge of the virus was minimal. From Figure 4, the score for BC was much higher for 'low awareness and high F&P' (orange line) than for 'low awareness and low F&P' (blue line).

doi.org/10.32388/EKDY28.2

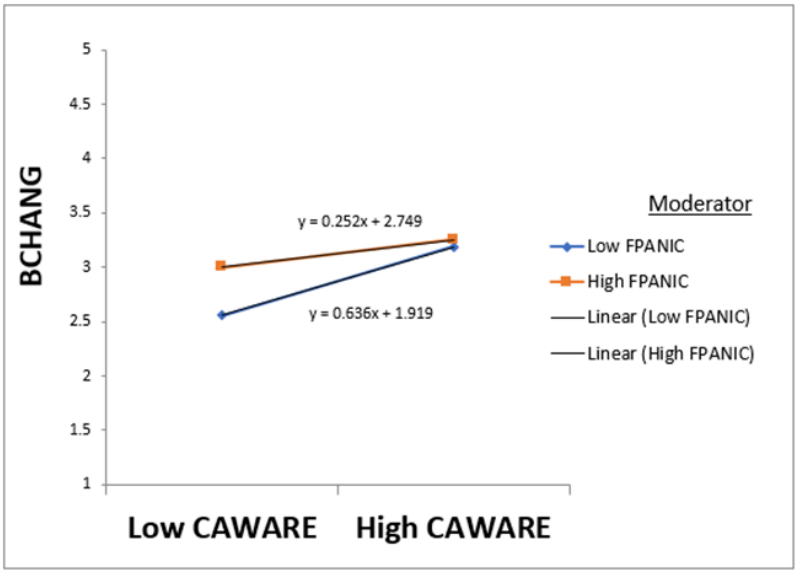

Figure 4. Two-Way Interaction Plot

Conclusion

The study sought to assess the effect of government communication on BC amidst the COVID-19 pandemic, and the mediating role of awareness in this relationship. The moderating role of F&P in the relationship between awareness and BC was also ascertained. The study was based on 304 residents in Ghana. Descriptive analysis was conducted, after which SEM was run to estimate the path coefficients. It was concluded after the study that government communication had a significant positive effect on BC among residents in Ghana. Further, government communication had a significant positive effect on COVID-19 awareness, while awareness subsequently had a significant positive effect on BC among the citizens. Awareness was found to partially mediate the relationship between government communication and BC. Finally, it was concluded that although F&P had a direct positive effect on BC among citizens, it negatively moderated the relationship between awareness and BC.

Conflict of Interest

There were no potential or real conflicts of interest in the conduct of this study.

Acknowledgement

We wish to thank all the participants of this study.

Data Availability

The data for this study is available upon request to the corresponding author.

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Declarations

Funding: No specific funding was received for this work.
Potential competing interests: No potential competing interests to declare.